THAT WHICH IS CLAIMED:

1. A method for evaluating the affinity of one or more ligands for a peptide of interest, comprising the steps of:

a) identifying said peptide of interest;

b) preparing said peptide to be coupled to a sensor;

c) preparing said sensor to be coupled to said peptide;

d) coupling said peptide to said sensor;

e) quantifying the signal output from said sensor;

f) exposing said sensor to one or more ligands; and

g) quantifying the signal output from said sensor and comparing to the previously obtained signal.

2. The method of claim 1, wherein the step of preparing said sensor to be coupled to said peptide comprises the step of depositing a Langmuir-Blodgett film on said sensor.

3. The method of claim 2, wherein said Langmuir-Blodgett film is prepared from monolayers formed from a method comprising the steps of:

(a) providing a composition comprising at least one amphiphilic compound, wherein said composition contains not more than 25% of a volatile organic solvent;

(b) immersing one end of a wettable planar surface into an aqueous subphase, wherein said planar surface forms an angle of about 90-170 degrees to an air/liquid interface of said subphase, and said subphase comprises at least one monovalent cation and at least one bivalent cation;

(c) delivering said composition at a rate of about 0.02-4.0 ml per minute to said planar surface to form a monolayer; and

(d) compressing said monolayer to a desired surface pressure.

4. The method of claim 3, wherein said amphiphilic compound is a phospholipid which has been covalently coupled to a peptide of interest.

5. The method of claim 4, wherein said peptide of interest comprises the amino acid sequence ASSLNIA.

6. The method of claim 1, wherein the step of preparing said peptide to be coupled to said sensor further comprises the step of adding a spacer to said peptide.

7. The method of claim 6, wherein the step of adding a spacer to said peptide comprises synthesizing said peptide in combination with said spacer.

8. The method of claim 1, wherein the step of preparing said peptide to be coupled to said sensor comprises biotinylation of said peptide.

9. The method of claim 1, wherein the step of coupling said peptide to said sensor comprises the addition of streptavidin, whereby molecular self-assembly results in the coupling of said peptide to said sensor by streptavidin-biotin interaction.

10. The method of claim 9, wherein the step of exposing said sensor to one or more ligands comprises exposing said sensor to a tissue sample.

11. The method of claim 10, wherein said tissue sample is prepared from less than three different organs from one animal species.

12. The method of claim 11, wherein said tissue sample is prepared from tissue of at least two different animal species.

13. The method of claim 11, wherein said tissue sample is prepared from human tissue.

14. The method of claim 1, wherein said sensor comprises a piezoelectric crystal.

15. The method of claim 14, wherein said sensor is an acoustic wave sensor.

16. The method of claim 1, wherein the method of identifying said peptide of interest comprises the steps of:

a) constructing a bacteriophage library which expresses random peptides at the amino terminus of a phage protein; and

b) exposing the resulting phage to cells of interest;

c) selecting said peptides of interest based on *in vivo* binding.

17. The method of claim 16, wherein the step of selecting said peptides of interest based on *in vivo* binding comprises at least one round of screening of the pool of potential peptides of interest in an animal of a different species than the prior round of screening.

18. A method for evaluating the affinity of one or more ligands for a peptide of interest, comprising the steps of:

a) identifying said peptide of interest by *in vivo* screening;

b) preparing said peptide to be coupled to a sensor;

c) preparing said sensor to be coupled to said peptide;

d) coupling said peptide to said sensor;

e) quantifying the signal output from said sensor;

f) exposing said sensor to one or more ligands; and

g) quantifying the signal output from said sensor and comparing to the previously obtained signal.

19. The method of claim 18, wherein the step of identifying said peptide of interest by *in vivo* screening comprises at least one round of screening of the pool of potential peptides of interest in an animal of a different species than the prior round of screening.

20. A ligand sensor device comprising:

a) a sensor comprising a piezoelectric crystal;

b) a coupling composition layer; and

c) a layer essentially comprising a peptide of interest on top of said coupling composition layer, whereby the binding of ligands to said peptide of interest may be detected by a change in the signal output from said sensor.

21. The ligand sensor device of claim 20, wherein said sensor is an acoustic wave sensor.

22. The ligand sensor device of claim 20, wherein said coupling composition layer comprises streptavidin and avidin.